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**Are there indications for upper and lower
limits for air space and outer space in air
law, space law and national legislation?**

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The origins

- **Usque ad coelum/usque ad sidera**

Air law

- **Chicago Convention on International Civil Aviation of 7 December 1944**
- Art. 1
- The contracting States recognize that **every State has complete and exclusive sovereignty over the airspace above its territory**
- The notion of “**airspace**” is not defined

Air law

- International air law substantially regulates **aviation activities** → it is sure that aviation activities take place in the airspace
- No clues are offered by international air law norms on where the upper limit of airspace is situated

Space law

- The **regime of freedom** codified by the **Outer Space Treaty (OST)** of 27 January 1967 applies to **outer space**, which is **not defined**
- However, **outer space includes the Moon and other celestial bodies**
- In the French version, outer space is identified as “**espace extra-atmosphérique**”, but that does not necessarily imply the choice of a physical notion whereby outer space would start where atmosphere as a physical dimension ends

Space law

- In fact, a precise physical limit of the atmosphere does not even exist, unless one considers the **von Kármán line**, at **100 km above the Earth**, as the theoretical line where aeronautical flight becomes impossible
- But we have no elements to say the OST and the other space treaties adopt the von Kármán line

Space law

- “Espace extra-atmosphérique” is the French equivalent to “outer space”, “espacio ultraterrestre” etc. and neither of these terms do establish a boundary

Space law

- The space treaties do also apply, in a functional sense, to **space activities** (or “activities in outer space”), and those activities are mainly carried out by means of **space objects** (or “objects launched into outer space”)
- Space object has not necessarily always the same meaning throughout the whole of international space law

Space law

- **Registration Convention of 14 January 1975**
- Art. II
- **When a space object is launched into Earth orbit or beyond, the launching State shall register the object**
- **→ Earth orbit or beyond = certainly outer space**
- That does not entirely exclude that areas below Earth orbit might be considered outer space

COPUOS LSC

- Working group on delimitation → LSC →
 - 1) 1995: Questionnaire on possible legal issues with regard to aerospace objects
 - 2) 2005: request of information on National legislation and practice relating to definition and delimitation of outer space
 - 3) 2006: Questions on the definition and delimitation of outer space

National legislation: no indication or renvoi to international law

- **Most replies to questionnaires:**
- **National laws do not contain any indication on the delimitation of airspace and outer space**
- Mexican Constitution, Art. 42:
- The national territory includes ... the space situated above national territory, with the extension and in the ways that shall be established by international law

National legislation: misleading indications

- We find no indication either in the laws using the expression “espace extra-atmosphérique” or “spazio extra-atmosferico”
- Ex. France, Law No. 2008-518 of 3 June 2008 on space operations, where “opération spatiale” is defined as “toute activité consistant à lancer ou tenter de lancer un objet dans l’espace extra-atmosphérique ou à assurer la maîtrise d’un objet spatial pendant son séjour dans l’espace extra-atmosphérique” (art. 1.3)

National legislation: misleading indications

- The same can be said for the Belgian “Loi relative aux activités de lancement, d’opération de vol ou de guidage d’objets spatiaux” of 17 September 2005, in its French version, whereby “objet spatial” is defined as “tout objet lancé ou destiné à être lancé dans l’espace extra-atmosphérique...” (art. 3.1) etc. or for the Italian Law 12 July 2005 No. 153 implementing the Registration Convention, according to which all objects launched “nello spazio extra-atmosferico” have to be registered (art. 3)

National legislation: misleading indications

- In the Belgian law, “espace extra-atmosphérique” is the equivalent to the Dutch version “kosmische ruimte”, and in fact all these different expressions simply mean, in the respective languages, “**outer space**”, as in the OST

National legislation: ambiguous indications

- **US:** the case is somewhat more complex
- Under the National Aeronautics and Space Act of 1958, as amended, NASA is entrusted with the responsibility over “aeronautical and space activities” sponsored by the US
- “Aeronautical and space activities” are defined, i.a., as “research into, and the solution of, problems of flight within and outside the earth’s atmosphere”

National legislation: ambiguous indications

- The most that can be said about NASAct, is that the **airspace** would seem to be identified with the “**atmosphere**”, which is conceived as the area in which aeronautical flight is possible
- Outer space (or simpler “**space**”) is identified with the area “**outside the atmosphere**”, conceived as the place where space flight (i.e. orbital flight or extraorbital flight) is possible
- That could place the boundary line according to US legislation somewhere around the von Kármán line
- But another interpretation would also be possible: that “atmosphere” is used in a purely conventional fashion (as in the French “extra-atmosphérique”)
- One also has to take into account that these provisions were adopted in 1958, i.e. at dawn of space activities

National legislation: ambiguous indications

- Whatever the correct interpretation, even US legislation does not contain precise indications on the boundary line between airspace and outer space

National legislation: clear but not precise indications

- The view is expressed in clearer terms in the South African Republic Space Affairs Act No. 84 of 1993 (art. 1):
- “outer space” means the space above the surface of the earth from a height at which it is in practice possible to operate an object in an orbit around the earth
- A sufficiently flexible definition to accommodate technological changes

National legislation: exact (but divergent) indications

- A specific indication of an altitude is provided by the Australian Space Activities Act of 21 December 1998, as amended, whereby “*launch* a space object means launch the object into an **area beyond the distance of 100 km above mean sea level...**” (art. 8; see related definitions of “launch vehicle”, “space object”, “return a space object”)
- Although Australia specifies in its reply to the Questionnaire on National legislation that “identifying the 100-km altitude in the Act was not an attempt ... to define or delimit outer space”

National legislation: exact (but divergent) indications

- Other, less relevant, indications point to totally divergent directions
- Belarus reply to Questionnaire on National legislation:
- Airspace below an altitude of 20,100 m is classified and flights within it are governed by domestic legislation
- Outside classified airspace (**above an altitude of 20,100 m**), which is **considered outer space**, the provisions of international agreements apply

National legislation: exact (but divergent) indications

- Serbia reply to Questionnaire on National legislation:
- Under the plan of use of radio frequencies in force, the term “outer space” is defined as **“outer space at a distance of 2 million km or more from the Earth”**
- If we should rely on this definition, the Moon would not be in outer space...

Suborbital flights

- A boundary, although not an exact one, can be established *de facto*, as far as States tend to have suborbital flights (and other suborbital activities) regulated by their aviation authorities and consider them to take place within their national airspace

Suborbital flights

- **US:** the Commercial Space Act of 1998 makes a distinction between **outer space** and **suborbital trajectory**
- Ex.: “the term “space transportation services” means the preparation of a space transportation vehicle and its payloads for transportation to, from, or within outer space, or in suborbital trajectory”

Conclusions

- **Most national laws do not contain any clear indication on the boundary line between airspace and outer space**
- The only reasonable precise indication is the 100 km altitude contained in the Australian law
- **International law and most national laws seem to converge on the fact that outer space begins where orbital flight becomes possible**